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TEMPORARY COVERED SOURCE PERMIT REVIEW - NO. 0436-01-CT

Permit Renewal
Application No. 0436-03

Applicant: West Hawaii Concrete

Facility: 250 TPH Stone Crushing and Screening Plant with 325 hp Diesel Engine Generator

Equipment Location: Various locations throughout the state

Initial Location: Kamuela, Hawaii

UTM: 2,209,550N; 224,400 E (NAD-83)

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SICC: 1429

Background

The applicant is applying for a renewal of a temporary covered source permit. No changes to the means and methods of operation are being proposed. The background of the facility is as follows.

West Hawaii Concrete (WHC) purchased a 250 TPH crusher and diesel engine generator from Waste Management of Hawaii, Inc. (WMH) and the transfer of ownership was completed on April 1, 2002. At the time of the transfer, WHC applied for a minor modification to convert the CSP to a temporary CSP and to increase the stack height. The change to a temporary permit required a new ambient air quality review using higher background concentrations from around the state. As such, it was necessary to increase the stack height to 19 feet above ground level in order to comply with the SAAQS. Additionally, operation of the facility is limited to 4,000 hours per rolling 12-months in order to remain in compliance with the SAAQS. The amended permit was issued on December 2, 2002.

The plant is a stone processing facility, SICC 1429. A 25 hp feeder feeds the vibrating hopper and impact crusher. A conveyor transports the crushed material to a screen. Material too large to pass through the first deck of the screen is fed back into the crusher via conveyor. Material that passes through the first deck but not the second is discharged as a mid-size material and transported via conveyor to the mid-size stacker. Material passing through both decks of the screen is discharged as fines and is transported via conveyor to the fines stacker. A 325 hp diesel engine generator, which is integrated into the 250 TPH

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crusher, powers the crusher, screen, and conveyors. Fugitive dust is controlled by water sprays at the hopper and stackers. All other areas use manual watering to control fugitive dust. Due to the size and manufacture date of the crusher, the crusher is subject to 40 CFR Part 60, Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants.

Equipment Description

- a. 250 TPH Eagle Rock Crusher Co., Jumbo 1200 Closed Circuit Plant, model no. 33D4204, serial no. 10901
- b. Cummins Diesel 325 hp diesel engine generator, model no. NTA855P
- c. Horizontal shaft impactor, 37" x 48" feed opening, model RC-12
- d. Vibrating Grizzly feeder
- e. 2-Deck Vibrating Screen 5' x 16'
- f. Various conveyors
- g. Two (2) portable radial stackers

Air Pollution Controls

Water sprays are mounted at the entry of the vibrating hopper and at the end of the radial stackers to control fugitive dust from the crushing operations. Manual watering, including the use of water trucks, will control fugitive dust from the stockpiles and unpaved roads.

Applicable Requirements

Hawaii Administrative Rules (HAR):

Chapter 11-59, Ambient Air Quality Standards

Chapter 11-60.1 Air Pollution Control

Subchapter 1, General Requirements

Subchapter 2, General Prohibitions

11-60.1-31 Applicability

11-60.1-32 Visible Emissions

11-60.1-33 Fugitive Dust

11-60.1-37 Process Industries

11-60.1-38 Sulfur Oxides from Fuel Combustion

Subchapter 5, Covered Sources

Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning

11-60.1-111 Definitions

11-60.1-112 General Fee Provisions for Covered Sources

11-60.1-113 Application Fees for Covered Sources

11-60.1-114 Annual Fees for Covered Sources

11-60.1-115 Basis of Annual Fees for Covered Sources

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Subchapter 8, Standards of Performance for Stationary Sources
11-60.1-161 New Source Performance Standards
Subchapter 10, Field Citations

NSPS:

The 250 TPH crusher was manufactured in 1992 and is subject to 40 CFR, Part 60, Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants. Subpart OOO states that portable stone crushing plants with capacities greater than 150 TPH that commence construction, reconstruction, or modification after August 31, 1983 is subject to the requirements of the subpart.

CDS:

The facility is a covered source and thus, a CDS source.

Non-Applicable Requirements

PSD:

PSD does not apply since this facility is not a major source.

BACT:

A Best Available Control Technology (BACT) analysis is required for new or modified emission units if the net increase in pollutant emissions exceeds significant levels as defined in HAR §11-60.1-1. This is an existing facility and no modifications are being proposed.

CAM:

The purpose of Compliance Assurance Monitoring (CAM) is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 Code of Federal Regulations, Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential pre-control emissions that are 100% of the major source level; and (5) not otherwise be exempt from CAM. Since the facility is not a major source, CAM does not apply.

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CERR (Consolidated Emission Reporting Rule):

40 CFR part 51, Subpart A – Emission Inventory Reporting Requirements, determines the annual emissions reporting frequency based on the actual emissions of each pollutant from any individual emission point within the facility that emits at or above the triggering levels. Since the trigger levels are at or above the major source levels and by definition, a temporary source cannot be a major source, the facility is not subject to annual emission reporting under CERR. The Department does however require facilities to report their annual emissions if the facility-wide emissions exceed the Department's trigger levels. The Department uses the data for in-house recordkeeping purposes. Table 1 below summarizes the Department's trigger levels and illustrates the facility's applicability.

NESHAP/MACT:

Stone processing is not a NESHAP source.

40 CFR 63, Subpart ZZZZ National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines is not applicable to the diesel engines because the facility is not a major source of HAPs.

Synthetic minor:

A synthetic minor is a facility that without limiting conditions, physical or operational, emits above the major triggering levels as defined by HAR 11-60.1-1 for either criteria pollutant(s) or hazardous air pollutant(s). This facility is not a synthetic minor.

Insignificant Activities/Exemptions

No insignificant activities were identified in the application.

Alternate Operating Scenarios

The applicant did not propose any alternate operating scenarios.

Project Emissions

Emissions for the diesel engine were estimated using AP-42 section 3.3, revised 10/96.

Emissions for the crushing operation were estimated using AP-42 section 11.19.2, revised 1/95.

The estimated emissions for both sources are shown in Table 2. The emission factor for the storage piles was derived using AP-42 section 13.2.4, revised 1/95.

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Table 1
Estimated Emissions for the 250 TPH Crushing Operation and 325 hp Diesel Engine

pollutant	250 TPH plant 4,000/8,760 hrs (TPY)	325 hp DEG 4,000/8,760 hrs (TPY)	facility emissions 4,000 hrs (TPY)	facility emissions 8,760 hrs (TPY)	DOH trigger (TPY)	significant levels (TPY)
PM ₁₀	6/13	1.5/3.2	7.5	16.2	25	15
SO _x	--	1.4/3.0	1.4	3.0	25	40
NO _x	--	20.9/45.7	20.9	45.7	25	40
TOC	--	1.7/3.7	1.7	3.7	25 ¹	40
CO	--	4.5/9.8	4.5	9.8	250	100

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Air Quality Assessment

An air quality assessment is not required for this application because there are no proposed changes. However, the applicant submitted an ambient air quality impact analysis and the Department reviewed it. The applicant used the ozone limiting method (OLM) to estimate the NO₂ concentration. The OLM is allowed by the Department however, the Department discourages its' use. The applicant applied the OLM properly and the calculations were done correctly. As provided below, the Department did its own analysis without using the OLM. The annual NO₂ concentration was adjusted down by the operational limitation of 4,000 hours per rolling 12-months.

An ambient air quality impact analysis using the USEPA SCREEN3 model was completed for the 325 hp diesel engine generator located on the crushing unit. Assumptions used in the SCREEN3 modeling analysis are as follows:

- Rural dispersion parameters
- Default meteorology

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Terrain:

Flat terrain, no terrain elevations used. The base of the diesel engine and receptors are at the same elevation.

Potential downwash effect:

The structure of the 250 TPH crusher was used as the downwash building for the diesel engine. The dimensions used were 13 feet high by 59 feet square.

Receptor locations:

Receptors were located in areas considered ambient air. Since this is a temporary source where fence lines and/or boundaries may or may not exist, ambient air is considered immediately adjacent to the stack.

Background air quality data:

The background air quality data shown in Table 4 are the highest concentrations from around the state. The highest background levels from around the state were used because this is a temporary source to be located anywhere in the state. Using the highest background levels insures that the source will meet the SAAQS at any temporary location within the state.

Stack parameters:

Table 2 lists the emission rates and stack parameters used in the ambient air quality analysis.

Table 2
Stack Parameters

Source	Emission Rates				Stack Parameters			
	SO ₂ (g/s)	NO ₂ (g/s)	CO (g/s)	PM ₁₀ (g/s)	Height (m)	Temp (°K)	Flow Rate (m ³ /s)	Diameter (m)
325 hp DEG	0.09	1.31	0.28	0.09	5.79	736	0.90	0.13

The maximum concentration predicted by SCREEN3 was 470.7 µg/m³ at a distance of 34 meters from the stack.

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The U.S. USEPA scaling factors used:

Table 3

Air Pollutant	Averaging Time	Scaling Factor
SO ₂	3-Hour	0.9
	24-Hour	0.4
	Annual	0.2
NO ₂	Annual	0.2
CO	1-Hour	--
	8-Hours	0.7
PM ₁₀	24-Hours	0.4
	Annual ^b	0.2

The maximum predicted concentrations for the diesel engine are shown in Table 4.

Table 4

Comparison of Modeling Results to State Ambient Air Quality Standards

Pollutant	Averaging Period	Max (µg/m ³)	Adjusted ^a (µg/m ³)	Background (µg/m ³)	Total (µg/m ³)	SAAQS (µg/m ³)	% of SAAQS
SO ₂	3 hr	37	37	574	611	1,300	47
	24 hr	16	16	112	128	365	35
	annual	8	4	10	14	80	17
NO ₂	annual	124	57	9	66	70	94
PM ₁₀	24 hr	17	17	78	95	150	64
	annual	9	4	23	27	50	54
CO	1 hr	133	133	4,788	4,921	10,000	49
	8hr	93	93	2,651	2,744	5,000	55

a - Adjusted for 4,000 hours of operation = Max * (4,000/8,760)

Based on these assumptions, the air emissions impacts from the crushing operation and diesel engine are within State and Federal Ambient Air Quality Standards.

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Conclusion and Recommendation:

The applicant is proposing to continue operating a 250 TPH stone crushing and screening plant equipped with a 325 hp diesel engine generator. The equipment will operate a maximum of 4,000 hours per year. Compliance of the annual limitation will be monitored by the use of a non-resetting hour meter on the diesel engine. Air pollution controls at the facility consist of water sprays at various locations.

The modeling analysis for the diesel engine generator demonstrates compliance with State and Federal ambient air quality standards. Issuance of a Temporary Covered Source Permit is recommended based on the review of the information provided by the applicant and the conservative nature of the calculations.

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Appendix

**Emissions Calculations
Ambient Air Quality Analysis
Modeling**